

end of the shield ; so that, in fact, it is even more free than in *Chlamydophorus*.

In these places it is united by an extension of the skin of the body, which from these parts extends over the whole internal surface of the disk. The whole outer surface of the bony disk is also covered by a very thin skin, which is visible and easily rubs off the animal that has been preserved in spirit.

The male and female are very like one another in external appearance ; but the penis of the male is very large, and fusiform.

Observations on the Structure of the Proboscis of an Hermaphrodite Nemertian from the Marseilles Coast. By M. E. ZELLER.

M. Marion has described, under the name of *Borlasia Kefersteini*, a curious Nemertian, the examination of which proves with certainty the occasional hermaphroditism of the Turbellaria of this group. The importance of this anatomical fact leads me to present to the Academy the results of some investigations made in the laboratory of the "École pratique des Hautes Études" of Marseilles, under the direction of M. Marion, in consequence of which it has been ascertained that the *Borlasia* parasitic upon *Phallusia mamillata*, so frequent in the gulf, must be united with *B. Kefersteini*, with which it presents the same sexual organization. It will therefore in future be easy to meet with this species, which always exists in great abundance on the branchial tissue of the Ascidia. The anatomical examination of more than sixty individuals has revealed to me some peculiarities, often not very observable, in the structure and functions of the proboscis.

The greatly developed proboscis extends in the dorsal region of the animal from the ganglia to the anus, where it is recurved so as to attach itself to the walls of the general cavity. I have distinguished five parts, namely :—1, a protractile region ; 2, a bulb of the style ; 3, a poison-sac ; 4, a glandular region ; and 5, a muscular region.

The walls of the first four parts of this organ are formed by longitudinal and transverse muscles ; the muscular region seems to be formed entirely by longitudinal muscles.

The protractile region is equal to about one third of the total length of the proboscis ; it passes between the commissures of the cerebral ganglia, is reflexed, and fixed by its terminal portion to the membrane which covers these ganglia. On its muscular envelope we may distinguish a transparent homogeneous layer, roughened with pretty thick papillæ, resembling more or less elongated mamillæ, upon which I have not observed any vibratile cilia.

Behind this region is placed the bulb of the style, of a more or less rounded form, in the centre of which is arranged the apparatus of attack. The point, which is much drawn out, penetrates by a small aperture into the inferior portion of the protractile part. It is fixed at its base in a sort of ring or ridge which surmounts the haft. The mass of the haft appears to be granular and brownish.

The style does not float freely in the centre of the bulb. It is

placed in a sac having the form of two truncated cones one above the other; that in which the haft plays rises nearly to the height of the ring. The margins of this sac appear to be attached to the haft by muscles destined to facilitate the movements of the style.

On the two sides of the upper region of the bulb are the styligenous pouches, three in number. These are ovoid cavities, two of which are placed horizontally on each side of the base of the haft, with ducts which, starting from the extremity near the base of the style, are directed towards its point. (I have not been able to determine exactly where these ducts open.) The third was on the right, and placed vertically. Most frequently they contain three darts; but in many individuals I have found four and even five, surrounded by their basal ring and arranged symmetrically in accordance with the longer axis of the pouches.

I have several times observed in these pouches, as Claparède had done in 1869 in *Tetrastemma varicolor*, the presence of a transparent vesicle; sometimes also I have seen this vesicle containing a dart in course of formation, as has been indicated in other species by Claparède, Schultze, and Keferstein.

In all these Nemertians I have detected above the styliferous apparatus a more or less blackish layer, which is no doubt a secretory apparatus. In those individuals in which the style was in process of formation this layer appeared to me to be thicker; it entirely enveloped the styligenous pouches. The mass which separates these pouches from the enveloping museles is formed by fine pigment-granules.

The poison-sac follows the bulb of the style. It is rounded, and the museular layer which envelops it is much thicker than in the other parts of the proboscis; it keeps in reserve the liquid produced by the glandular region. From this sac a duct starts, which traverses the bulb and opens near the point of the style.

Last comes the glandular region, which terminates the museular region, and the interior of which is filled with numerous vesicles containing little granular drops of an oily appearance, penetrating into the poison-sac in proportion as the latter is projected out of the animal. I have always seen this part of the proboscis occupied by these vesicles, just as the poison-sac was filled with the liquid which has to flow from it.

When the animal has to project its proboscis we see the museular region take on a vermicular movement, which is communicated to the glandular region, and carries with it the liquid of the general cavity, which collects in front of the cephalic lobes and compels the anterior part of the proboscis to fold like the finger of a glove and penetrate into the canal which separates it from the orifice of issue. The canal, formed of very powerful museles, plays an important part in the projection of the proboscis. The protractile region penetrates into it with difficulty; but as soon as a part of it projects under the influence of the liquids accumulated in the *cul-de-sac*, we see it issue with very great rapidity, in consequence of the pressure of these museles upon the part which is still in the interior.

The repeated movements of the inferior region of the proboscis quickly produce such a pressure in the anterior part that it is soon projected. Compressed at the same moment by the muscles of the canal just mentioned, the bulb becomes terminal; and we notice the jerking-movements of the style at the same time that a granular liquid flows through an aperture situated near its point.

The movements which act in the projection of the proboscis serve equally to accumulate the liquid of the glandular region at the entrance of the poison-sac. The muscles which surround this sac contract in such a way that the anterior region seems to approach the posterior region. The same mechanism is produced in the bulb. It is this combination of movements that causes the issue of the point of the style at the same time as the flow of poison. As soon as the poison-sac has allowed a certain quantity of liquid to escape, this is immediately replaced by that contained in the glandular region.

The return of the proboscis is effected by the inverse contraction of the muscles of the canal and protractile region. These observations justify us in regarding the muscular region as the principal motor of the proboscis.—*Comptes Rendus*, April 14, 1873, tome lxxvi. pp. 966–969.

French Measures. By Dr. J. E. GRAY, F.R.S. &c.

French measure is being used by several scientific writers, being chiefly introduced by translators of French elementary books, who are too idle to reduce the French to the relative English measures; for there can be no doubt of the greater convenience of the English foot, inch, and line, being adapted to the different sizes of the things wished to be measured. Few people but can tell you what is a foot and what is an inch, and give a close approximation to the size in feet and inches of any thing you show to them; but I have never found a person using a French measure who could tell you the size of 190 millimetres, though he could tell what was the length of $7\frac{1}{2}$ inches, which is within a very little of the same thing.

It may be of some advantage to give such persons an idea of a size mentioned to be informed that a decimetre, or 100 millimetres, is about the usual length of a man's fore finger, from the tip of the nail to the back of the knuckle when the finger is bent down, and that the first joint of the finger when bent down is as nearly as possible 25 millimetres, or a fourth part.

I challenged a well-known physiologist who has long used French measure to give me his idea of the measure of certain things lying before him; and he declined to guess, and was surprised at the accuracy with which I could guess them by this simple means. The decimetre is as nearly as possible 4 inches, which is the usual length of the fore finger; and the first joint, as nearly as possible a quarter the length of the fore finger, an inch or 25 millimetres long.